CONTRIBUTIONS

TO THE

NATURAL HISTORY OF GENERAL PARALYSIS.

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TO THE

NATURAL HISTORY OF GENERAL PARALYSIS.[1]

For the last thirty years a disease known under the name of *General Paralysis of the Insane*, has been familiar to the physicians of all our best Lunatic Asylums, and is yet so little known to the medical profession at large, that, excepting a few eminent physicians in consulting practice, and some medical men who have, from their position, been frequently brought in contact with the inmates of our asylums, I have met with very few practitioners who had a correct idea of this disease. Many of them imagine, from the word *Paralysis*, that it is some form or degree of *palsy* associated with insanity. This ignorance is not, perhaps, to be wondered at, when we reflect that the disease is rarely seen but only in its earliest stages, except within the walls of an asylum, and that the name of it is calculated to convey, as we shall see, an erroneous idea of its nature, the *paralysis* being in no respect analogous to that of paraplegia, hemiplegia, or local palsy.

There are many interesting questions connected with the affection I have named, which have been the subject of much discussion among our French brethren; the hope of being able to contribute something towards a solution of some of those disputed points, and of making this affection more generally known among those whose opportunities have not afforded them illustrations of it in their own practice, has induced me to offer to the Society the following contributions to our knowledge of general paralysis:—

Dr Haslam, in his "Observations on Madness" (1809), refers to the symptoms of this disease in terms which show that he had recognised some of its distinctive features, but he failed to follow up his inquiries so as to make out its natural history. Esquirol was the first to direct attention to it; and M. Delaye, one of his medical

[1] Read before the Medico-Chirurgical Society.

assistants, was the first to describe it as a special disease. M. Bayle and M. Calmeil immediately afterwards were led to prosecute a full inquiry into its history, progress, varieties, and pathology. The monograph of Calmeil (1826) is generally regarded as the standard authority on this subject, but, except for the fact that Bayle described the disease as a *chronic meningitis*, which is apparently a hasty and imperfect generalization, while Calmeil described it without any such conclusions as to its pathology, as "Paralysie Générale des Aliénés," I cannot but regard Bayle's work (1822) as the more graphic and the more complete of the two. This disease may be said to have been unknown in this country until the publication of these works. Dr Conolly says he had not noticed it until he read Calmeil's work. For many years afterwards, I believe, it must have been imperfectly known and recognised even in our large asylums, if we may judge by the small proportion of such cases mentioned in the annual reports of these asylums, compared with the large number which now figure in the tables of their reports. The only other explanation of this fact is, that the disease has increased in frequency in this country of late years; and of this I believe there is some probability, from facts which might be cited.

This disease may be described either as a form of insanity complicated with general paralysis, or as a general paralysis complicated with insanity. For many reasons, which will be more apparent when the history of the affection has been narrated, I prefer the latter mode of viewing it. The so-called paralytic symptoms are the diagnostic, the significant, and the hopeless indications of this distressing malady. They are more or less constant,—some of them are always present; they are pathognomonic, while the accompanying insanity may vary in its degree, its character, and progress. I shall, therefore, describe it from this point of view,—that is, I shall first describe the nature and progress of the so-called *paralysis*.

The most important, and generally, but not always, the *first* symptom of this paralysis, is the peculiar impairment of the power of *articulation*. The person "speaks thick," mumbles certain words, exactly like a person who is slightly intoxicated. Dr Bucknill's description of this symptom is so graphic and accurate, that I prefer giving you his account of it to my own:—

"There is neither stammering nor hesitation of speech. It more closely resembles the thickness of speech observable in a drunken man. It depends upon a loss of power over the co-ordinate action of the muscles of vocal articulation. In many instances the speech of the early paralytic is fluent and clear, except in the pronunciation of certain words, or sequences of words, which require the neat and precise action of the muscles of speech. Words composed of vocal sounds, connected by single consonants, are articulated with correctness; but words composed of numerous consonants, with few vocalic sounds, are articulated in a shuffled manner, which is perfectly characteristic. The patient may even possess the power of

articulating these words correctly, if he purposely attempts to do so; but if the examiner holds him in conversation for a few minutes, the ear will infallibly detect the slight but fatal symptom of incurable disease. Some little practice in the wards of an asylum is needful to the attainment of readiness in the appreciation of a physical symptom of this kind, just as all the verbal descriptions ever given in books of stethescopy are of little value, unless the ear is itself practised on the chest of the patient labouring under pulmonary or cardiac disease."—P. 332.

I have not unfrequently pointed out this affection of the speech to the nearest relatives of the patient, in cases where it was so slight that they had never been struck with it, although they at once recognised the truth of my remarks when their attention was drawn to the subject.

Accompanying this affection of the speech there is (I think always) a peculiar expression of the countenance, very difficult to describe, but so peculiar and so easy to recognise, when frequently seen, and so very characteristic of the disease, that any one who has had a few years' experience among the insane could pronounce upon the existence of general paralysis from the aspect of the face alone. The face is characterised by a general hebetude or want of expression—a heaviness of the features;—the eyes have a vacant and absent expression, the pupils being often unequally dilated; the angles of the mouth are sluggish in their movements, the risor and levator anguli oris muscles not appearing to act at all;—the mouth opens and shuts in a piece, as it were, without any play of the lips indicative of the sentiments and passions. Not unfrequently the face trembles before speaking, as if the person were about to cry.

When the tongue is protruded, it is done without any marked deviation to one side as in palsy, at least rare; but it often wavers from side to side, as if beyond control; and, in the more advanced stages, the patient is unable, by an effort of the will, to protrude it at all, but simply opens his mouth, when asked, to show his tongue. The pulse of the general paralytic is more commonly feeble and easily compressed; the extremities cold and livid; and every indication exists of a weak and languid circulation. According to Dr Austin, the arteries are rigid in 50 per cent. of the cases, and then the pulse feels hard and full, although in reality it is weak.

The affection of the speech which I have described, gradually increases during the progress of the disease, until, in its latter stages, the speech becomes almost entirely inarticulate and unintelligible.

At some period of the disease the powers of locomotion appear to be impaired and the gait is unsteady. This affection sometimes precedes, but more generally succeeds, the impaired articulation. In some cases I have known the unsteady walking precede for some *years* the affection of the speech or the symptoms of insanity, and the disease appeared to creep slowly upwards from the lower part of the spinal cord, as it were, to the central organ of the nervous

system. Generally, however, the impaired locomotion succeeds the impaired speech.

This affection of the lower limbs, which certainly generally precedes any affection of the upper extremities, is very different from the affection of the limbs in ordinary palsy. And this is one of the features of the malady which have not, I think, been sufficiently distinguished. There is no dragging of the limbs as in hemiplegia; there is no loss of muscular power; no *palsy*, in the ordinary sense of the term, in the limbs at all. There is an impairment in the power of *directing* the movements of the limbs, an inability to control their co-ordinate action. The result of this is, that the person walks unsteadily, widens his base of support, and sways from side to side like a drunken man. In well pronounced cases, especially in those where the so-called paralysis has long preceded the mental affection, he rises slowly from his seat, balances himself. and begins to walk, very wide in the gyves, fixing his eye sometimes on the object towards which he is tending, and making for it as steadily as he can. In such cases, if the individual is made to close his eyes, it often happens that he cannot balance himself, and with difficulty saves himself from falling: he walks up a stair with comparative ease and comfort, because he has some object before his eyes to guide him; but he goes down stairs with fear and difficulty, because there is nothing before him on which he can fix his eye. This is the most exaggerated or fully-developed form of the paralytic condition; but it is seldom seen, in the early stages at least, of the disease which I am describing, so strongly marked. Very often it is hardly observable, consisting merely of a slight widening of the limbs, and a rolling or shambling, and somewhat unsteady gait; in fact, the affection of the speech is not more truly like that of drunkenness than that of the locomotive powers; they are both the result of the loss or impairment of that power by means of which we regulate and control the co-ordinate action of our voluntary muscles; and may exist, in every varying degree, from the slightest appreciable thickness of speech or unsteadiness of walking, up to total loss of articulate speech or the power of walking.

In *ordinary palsy*, the nervous connection between the muscles of the palsied part and the organ of volition is, as it were, cut off entirely, and the individual can no longer, by an act of the will, make the palsied muscles act; he cannot lift his arm, or close his hand, or draw up his limb. Or, it may be, he conveys a feeble and imperfect volition to the part (if the palsy is incomplete or passing off), and the hand is grasped feebly, or the limb is slowly and with difficulty drawn up. In the so-called paralysis of the general paralytic, on the other hand, there appears to be no *stoppage* of the nervous connection or electric current between the organ of volition and the affected parts; but the volition is *irregularly* conveyed and *distributed*. The person cannot *control* and *direct* his movements perfectly and *consentaneously*, just as a drunk man sees double, be-

cause he cannot make his eyes converge upon a given object; or walks unsteadily, because he cannot direct and regulate the harmonious movements of his limbs. In these movements of the general paralytic or drunk man, there is no *palsy*, in the ordinary sense of the term; the person affected will run, or dance, or kick, as actively and violently as ever, but his movements are irregular and not always those desired or willed. In fact, they resemble in kind, although very much modified in degree, the movements of *chorea*, in which the patient in vain attempts to steady his hand or carry it to his mouth.

I am anxious to enforce these distinctions, because I think they have not hitherto been recognised, and because the name of this affection is apt to mislead as to their nature.

Dr Bucknill is of opinion that, in the general paralysis of the insane, the excito-motory power is destroyed. He regards it as a general affection of the nervous system, impairing its whole efficiency, and states, from experiments made by him, that, in ordinary insanity and in ordinary palsy with insanity, the reflex actions are distinctly and readily produced by the use of a galvanic apparatus; but that, in general paralysis, the reflex action is very much impaired, so much so, that in many instances the strongest electric current failed to produce any effect. I have not found this to be the case. I have examined a number of my patients labouring under general paralysis in its most advanced stage with a view to this statement, and have uniformly found that, even when they were sound asleep and snoring loudly, tickling the soles of the feet was followed by its usual reflex act.

I have also repeated Dr Bucknill's experiments with the galvanic apparatus, and found, in every instance, the muscles contracted readily, and that even in the case of one patient who was within a few hours of death.[1]

I observe that Dr Reynolds, in his work on *Wasting Palsy*, corroborates my statements, by pointing out as a means of diagnosis, between general paralysis and wasting palsy, that in general paralysis the muscles contract readily under the stimulus of galvanism, while in wasting palsy they do not. In wasting palsy, in fact, the contractility of the muscular fibre is impaired or lost, while in general paralysis it still remains unimpaired.

This impairment of the muscular movement gradually increases and extends, the speech becomes more and more inarticulate, the locomotion more and more unsteady, until at last scarcely a word

[1] I do not think galvanism a trustworthy agent for ascertaining the existence of reflex muscular action. The proper effect of galvanism is to excite the contractile movements of the muscles through which the galvanic current is made to pass, and it is a measure of the contractility of the muscular fibre, not of the persistence of reflex acts. The simplest and most certain method of ascertaining whether reflex action remains, or is normally active, is tickling the soles of the feet or other parts of the body, especially during sleep.

can be distinguished, and the patient cannot rise or cross the room without being assisted.

The progress of these changes, however, varies very much in different cases; sometimes, for example, the speech is very little affected, hardly appreciably so, until a very advanced stage of the disease. In other cases it varies, being at times much more perceptible than at others. In the same way, the impairment of the locomotive powers in some cases is far from being obvious, even towards the latter stages of the disease; and in others, it is at times more perceptible than it is in general. In all cases, however, I think there is enough evidence left, either from one of these sources or the other, taken in connection with the state of the pupils, the expression of the face, and the action of the facial muscles, to make the physiognomy of the case diagnostic to an experienced observer.

Accompanying these changes, the control over the sphincters, sooner or later, is lost, and the urine and feces are discharged either involuntarily or unconsciously, or both. The patient now swallows with difficulty, and requires to be fed on slops or meat carefully minced, to prevent him choking. Accidents from this cause are not uncommon in asylums, even under all the care and watching that can be enforced.

The senses become blunted and impaired, but not paralysed or lost. The patient sees, hears, smells, and feels, but disregards slight sensations. In several cases I have seen amaurosis associated with general paralysis; and, in two such cases, the patients believed that they saw, although quite blind, and would describe what they imagined they saw before them. Contrary to the opinion of M. Croizart, loss of common sensation is not, I think, a diagnostic sign of this disease, any more than the loss of the reflex actions. Sometimes the patient complains of formication over the surfaces of the limbs, or may be seen incessantly picking imaginary vermin off his skin. Grinding of the teeth, especially during the night, and not unfrequently screaming, or incessant roaring at night, accompany the later stages of the disease.

The patient now becomes bedridden and entirely helpless. The decubitus of the general paralytic is remarkable; the patient commonly lies on his back, with the forearms rigidly flexed on the front of the chest. Not unfrequently the head is flexed and elevated from the pillow, the sterno-cleido mastoid muscles being rigid; and, in this posture he will lie, apparently for days, or at least hours, without ever resting his head on the pillow. Bed sores form readily and rapidly over the trochanters and sacrum; sometimes the skin on the heels, and all the other prominent parts on which the weight of the body rests, blackens and sloughs, and exhaustion at last carries off this now insensible and mere vegetating mass of humanity. During all this time the patient still retains the power of moving his limbs in bed, although the directive powers have gradually become more and more impaired.

I have described to you the gradual progress of the so-called paralytic symptoms in a case which goes on to a fatal termination by exhaustion, but in many cases death is accelerated, as we shall presently see, by other causes.

I have a strong conviction that the so-called paralysis, the impaired locomotive powers (or unsteady gait), and the inarticulate speech, may exist for a considerable period previous to the access of the insanity. I have known them to continue and progress very slowly for many years before any symptoms of mental aberration manifested themselves, and then the delirium so peculiar to general paralysis has suddenly supervened, and mental derangement has continued to the end, running through its usual course.

I have known the paralytic symptoms, as I have described them, accompanied with impaired memory, go on for years, and proceed to a fatal termination slowly and without any insanity at all.

Such cases have been described by some of the French pathologists as belonging to a different class of diseases entirely, and have been styled cases of *progressive general paralysis;* and this point has been discussed pretty fully in the foreign journals,—some writers contending that it is a distinct disease (when there is no insanity), and others, that it is identical with the general paralysis of the insane, with the omission only of the complication of mental derangement. M. Lunier, who is one of the latest writers who has reviewed this subject, comes to the conclusion, which is quite in unison with the results of my own inquiries and observations, that there are many cases to be met in private practice, in our general hospitals, and even in our asylums, in which there is a progressive paralysis without any insanity, with, it may be, impairment of the memory and feebleness of the mental operations, but no distinct mental aberration. This is the opinion of M. Guislain (Ghent), who says, "he has seen many cases where there was a slow and gradual progress in the development of the peculiar paralytic symptoms, until death took place, without any delirium or intellectual derangement, the patient preserving his intelligence to the last." Such a case I saw very recently through the kindness of Dr W. T. Gairdner, in the person of a gardener, who had all the physical signs of general paralysis, which had affected him for five years, without any insanity or any affection of the intellectual powers beyond slight impairment. This man had several near relatives insane, a brother, I think, among others.

I am convinced that if the disease, *without insanity*, is to be regarded as a distinct one, it is one very closely allied to the general paralysis of the insane; so much so, that the absence of insanity is the exception, and an exception so rare as almost to be entitled to be called accidental.

The intimate and essential relation between the two affections is rendered conclusive, to my mind, by the gradations which connect the insane with the non-insane cases. In one case, alluded to be-

fore, the locomotion was affected in the way I have described, for fifteen or sixteen years, while the patient occupied an honourable position, and was esteemed as a man of very sound judgment and rare sagacity. Yet in this case the insanity, which at last supervened, had all the peculiar features of the insanity common to general paralysis; and two brothers of this gentleman died of general paralysis, in its usual form.

In several cases of an opposite type, I have seen the characteristic insanity developed in its most marked form, along with the paralytic symptoms, and have seen the patient recover his sanity so completely, that his own brother and wife could not trace the slightest impairment of intelligence, and yet the case has afterwards gone on to a fatal termination, in the usual course of cases of general paralysis of the insane. For these reasons I must regard all these cases as belonging to the same category and dependent upon the same pathological condition of the nervous system; while the concurrent insanity, although commonly presenting a peculiar form, may be altogether absent, or may be replaced, by simple impairment of the memory, feebleness of the mental operations, or, as not unfrequently happens, by melancholia or dementia. The whole of this subject,—the identity of these different affections,—general paralysis alone, general paralysis with ambitious delirium, with dementia, with monomania or simple loss of memory,—was discussed very fully in the Society of Medical Psychology in Paris, at several sittings, in October 1858, and the general conclusion then arrived at by the best authorities is in unison with that which I have given above.—*An. Med. Psych.*

Patients labouring under the disease which I have described, are liable to fits of a peculiar kind, which have been very appropriately designated *epileptiform* attacks. They resemble epilepsy perhaps more than any other affection, although by some they have been called *apoplectiform* attacks, from their resemblance to apoplexy; and by others, simply *congestive* attacks, with reference to their supposed cause, congestion within the cranium.

These epileptiform or congestive attacks, to which general paralytics are liable, vary very much in frequency and in degree, in different cases. In some patients they are very frequent, occurring every three or four weeks; in others they are very rare, occurring only once or twice in the whole course of the malady.

In some cases they are very slight; the patient complains of pain in the head and confusion of ideas, his face becomes very red and congested, he looks stupid, and perhaps cries without any cause; and, after a few hours in bed, he recovers his usual composure.

In other cases, with more or less congestion of the countenance and confusion of thought, there is a temporary loss of speech, lasting only a few minutes, or passing off after an hour's sleep.

In the more completely-developed attacks of this affection, there is a total loss of consciousness, with convulsive twitchings of the

muscles of the face or limbs; varying from one or two slight attaeks to repeated and very violent eonvulsions, lasting for hours, and aecompanied with great venous turgescenee of the face and sealp.

These epileptiform attacks are very eharacteristie, and have been regarded by some writers on the subjeet as essential features, and diagnostic only of this disease.

In some eases, the patient seems to be in a state of great terror and bewilderment; his skin eovered with a greasy perspiration, and of a dark brownish eolour; from being very fat, as not unfrequently happens in the earlier stages of the disease, he beeomes rapidly emaeiated. In such eases, there is often an incessant grinding of the teeth, continual moaning, or talking, or swearing, or sereaming, especially during the night-time.

The habits beeome very helpless, filthy, and destruetive. The destructiveness of elothing, and espeeially the fidgeting and twirling, and buttoning and unbuttoning of buttons, until they disappear from shirt, waistcoat, and coat, is so eommon a habit, that general paralysis is known in some asylums among the attendants as the "button mania."

Death sometimes ensues during one of the epileptiform attacks I have deseribed; sometimes by the patient turning over on his faee, and being suffoeated on his pillow, but more frequently after a suecession of violent eonvulsions, from what is ealled, from want of better knowledge, exhaustion. The more frequent eause of death, however, in general paralysis, is the supervention of other diseases, sueh as phthisis, diarrhœa, or exhaustion from bed sores. The causes of death in 108 eases, under my care, were as follows:—

I.—CAUSES OF DEATH.

	Males.	Females.
General Paralysis, . . .	60	7
Apoplexy, ...	1	1
Subarachnoid Hæmorrhage, . .	1	...
Pleurisy, ...	1	...
Pneumonia, ...	2	...
Gangrene of Lung, . . .	1	...
Bronchitis, ...	2	...
Asphyxia, ...	1	...
Diarrhœa, ...	4	...
Dysentery, ...	2	...
Bright's Disease, . . .	2	...
Exhaustion, ...	1	...
	78	8
Left the Asylum, . . .	14	4
Still Alive, ...	16	...
	108	12

Sueh are the phy<ical symptoms and progress of this disease.

Let me now briefly describe the accompanying mental symptoms. In general terms, it may be said that a gradually increasing *dementia* accompanies this affection, beginning with impaired memory, and terminating in total fatuity.

The disease, however, is often preceded by an attack of acute mania presenting the usual features, but leaving the patient when the maniacal symptoms pass off, more or less demented, with the impaired speech and unsteady gait of the general paralytic.

In some cases the maniacal attack is apparently recovered from; and some weeks or months afterwards, the so-called paralytic symptoms begin to manifest themselves.

Most frequently there is, immediately preceding the development of the paralytic symptoms described, or accompanying their development, an attack of a peculiar form of mania so often associated with general paralysis, as to have been called *mania paralytica*, and, from its character, *delire ambiteux* by the French writers. This peculiar delirium is very common. The patient fancies that he is possessed of enormous wealth; he is full of projects for the benefit of mankind; he is about to purchase and endow libraries and churches for the public good. He is a prince, ennobled by the Queen, about to marry a Spanish countess; he is possessed of fleets laden with gold and diamonds. The house in which he lives is a palace; all the attendants and females are his lords and ladies; the walls are gilded, the windows are made of diamonds; he himself made the sun which illuminates them; he is a mighty conqueror, and destroyed Sebastopol, captured the Emperor of Russia, but graciously pardoned him; he is God himself, and wields universal and omnipotent power. He can talk in any language; he can sing (and he does sing readily, but most discordantly); he can write most beautiful novels and enchanting poetry. He has carriages and horses without number—steamboats waiting to convey him to London to see the Queen—confidential missions from Lord Palmerston—schemes of universal conquest or universal philanthropy.

In the midst of all this imaginary power and grandeur, he is (and this is a very characteristic feature of general paralysis as compared with other forms of insanity with similar delusions) docile and *facile;* he is diverted from the highest enterprise or the most important duty, by the simplest request; he forgets the conquest of Europe, or the immediate commands of Her Majesty, for a walk round the airing-ground with an imbecile companion, to whom he talks condescendingly, promising him a dukedom or a bishopric. Everything about him is good—every one is *so* kind—his food is first-rate; he offers a cheque of L.75,000 for the purchase of the asylum, and promises to endow it with unbounded munificence, and to convert it into a paradise of brilliancy and bliss.

Sometimes the first indication of the disease is afforded by some act of foolish extravagance. A person of frugal and prudent habits purchases a number of pictures, some of them little better than

sign-boards, which he represents as Raphaels or Titians; he orders whole libraries home, or perhaps six or eight dozen of gold pencil-cases; or he purchases a worn-out hack, and boasts that it can trot to Glasgow and back again, with a dog-cart and four persons behind it, in an hour. Not unfrequently, while the conversation appears still rational, and any foolish act of extravagance has an ingenious explanation, the person will be found to be accumulating in his pockets or desk bits of glass or trash of various kinds, under the belief that they are precious stones.

The general paralytic varies in one remarkable and very constant feature from the maniac or monomaniac; he is neither suspicious nor resentful, he dislikes no one, suspects no one, nor would he offer an injury or insult to any one.

Some of the subjects of this disease are subject to occasional attacks, more or less frequent, of maniacal excitement. These attacks are frequently accompanied with great excitement and extreme violence, and all the symptoms of an acute paroxysm of mania.

In some cases there is a moral depravation, a tendency to theft, or an extreme lasciviousness, or a craving for stimulants. These symptoms, however, are not frequent. I think the latter are more commonly premonitory, and accompany the incipient stages only of the disease.

Sometimes, although not very frequently, instead of ideas of grandeur, riches, and importance, the patient labours under deep depression of spirits, or fancies that he is persecuted, or has other illusions common to other forms of insanity; sometimes a dementia or imbecility, not distinguishable, as far as the mental state is concerned, from other cases of dementia, accompanies this disease throughout its whole progress.

Sometimes the insanity has existed for some time before the development of the paralytic symptoms. I have seen general paralysis developed in cases of melancholia of one or two years' duration. In one such case the patient became suddenly happy, boasted of his powers of singing, of the beauty of his daughters, and of his wealth, while his speech and his gait began to indicate the transference of the case into one of general paralysis.

The relative priority of the symptoms in 120 cases under my care was as follows:—

	Males.	Females.
II. Paralytic symptoms were first remarked in	22	7
Insanity was first developed in . .	59	1
The symptoms were consentaneous in .	10	2
Unknown, ...	17	2
Total,	108	12

The character of the mental disorder in these cases is shown in the following table:—

III. CHARACTER OF MENTAL DISORDER IN 108 MALES.

More or less excited,		
With Delusions of Wealth, Power, etc.,		52
,, Suspicions,		3
,, No Delusion, Demented,		5
		—60
Depressed or Melancholy,		
With Delusions of Wealth, Power, etc.,		2
,, Suspicions, etc.,		2
Demented,		16
		—20
Quiet,		
With Exaltation of Ideas,		9
,, Suspicions,		5
Demented,		14
		—28
		—108

Kleptomania existed in 10 cases, viz. :		
Excited,	5	All with delusions of wealth.
Depressed,	1	All without delusions, demented, etc.
Quiet,	4	
	10	

I saw a very remarkable case some years ago in East Lothian in consultation, where the insanity had existed for seven years previous to the development of the symptoms of general paralysis.

In this case the gentleman, who was in a large and lucrative business in London, resolved to marry; and, accordingly, he corresponded with a lady he had known in his native country, in Scotland, many years before, and whom he had not seen since he had left the north to seek his fortunes in London. The lady accepted his proposals, and arrangements being made for the marriage, she went up to London, and they were united. He appears immediately to have conceived a mortal antipathy to his bride, with whom he did not cohabit for five or six years, and daily treated her with the utmost cruelty, often threatening her life, and behaving to her in every respect like an insane person, as he doubtless was. His conduct then suddenly altered, he became excessively uxorious, and his wife soon afterwards presented him with a son; but during this new phase of his malady his memory became so impaired as to attract for the first time the attention of his partners in business to his mental condition. He was pensioned off, and returned to Scotland some time afterwards. When I saw him, he was far advanced in general paralysis, helpless in his habits, inarticulate in his speech, hardly able to walk unassisted, but babbling about his pictures and his ancestors, and full of happiness. He soon afterwards died.

Some writers contend that the paralytic symptoms affect the upper extremities before the lower (Rodrigues); I do not think this is the case. Some contend that the impaired speech precedes any other paralytic symptom. This is the opinion of Dr Bellhomme. I cannot concur in this opinion either. In most cases it certainly is

the first paralytic symptom, but in others I think the gait is affected long before the speech, and in some well marked cases the affection of the speech has been hardly discernible until near the termination of the disease, while the affection of the gait was well marked throughout the whole progress of the attack.

IV. Of the Cases before referred to,	Males.	Females.
Speech alone was affected in . .	10	...
Gait alone, ...	8	1
Both, ...	90	11
	108	12

Some writers have regarded the unequal dilatation of the pupils as a diagnostic sign of this affection. When present, it is, along with other symptoms, certainly a very significant one, but it is by no means constantly to be observed. The whole appearance of the eye is very striking, but I fear the power of recognition of the eye of the general paralytic must be acquired by experience rather than by description. The eye has a heavy dull expression, caused, I think, partly by a certain amount of immobility in the pupil, which is less sensitive to light, and partly by less active movements and less intelligence of expression in the eye itself.

Dr Austin, the author of a work on General Paralysis, published within the last few months, indeed the only English work which has yet appeared on this subject, attaches very great importance to the condition of the pupils.

He thinks there is an early stage of general paralysis not yet recognised, and which he has not yet been enabled to establish from his own observations, but which rests on some data afforded to him by the late Mr Phillips; and that this early stage is characterised chiefly by permanently contracted or pin-point pupils, and also to a greater or less degree by alteration in the previous character of the individual, by an undue flow of animal spirits, unusual vivacity, and increased self-complacency. These mental symptoms are of unascertained duration; but, according to the few observations as yet made, they appear gradually to increase, and ultimately to lead to blunders in business, overt acts of folly or extravagance, which excite the surprise and alarm of friends, or the expostulations of interested parties, and ultimately to removal from business, change of scene, and anxious watching, until at last some extravagant delusion brings the patient for the first time under the special notice of the alieniste, or of his own physician.

If these observations should be confirmed by the attention of the general practitioner being directed to them, they may lead to important results, by enabling us to form a diagnosis of the disease at so early a period as to make it more amenable to treatment than it has been found to be in its more advanced stages.

Dr Austin attaches great importance to the condition of the pupils. In addition to the pin-point pupils of the early stages, he

deseribes a greatly diminished sensibility of the iris, generally affeeting one eye more than the other; so that the pupil of one eye is more dilated than the other, is sometimes irregular in form, and even when both pupils are of the same size, he says one of them will be generally found nearly motionless, while the other still eontraets and dilates under the stimulus of light. He goes further than this, and maintains that, when the right pupil is affeeted, the patient will always be found to labour under melancholia, or delusions of a sad and depressing kind; and that when the left pupil is affected, the patient is elated, and has grand or pleasurable faneies. When the pupils are equal and little affeeted, then there are no delusions; and when they are both affeeted alike, the delusions are of a mixed eharaeter. Dr Austin thinks he has established these laws by a long series of observations, of whieh he has tabulated 100. In eonneetion with this state of the pupils, he deseribes a eorresponding morbid eondition of the right or left thalamus: the right thalamus being diseased when there have been depressing emotions; and the left, when the patient has been elated and happy.

It is eurious to find how theories will mislead an observer. I have examined all the eases under my eare sinee this was published, and had them repeatedly examined and noted by others; and the results are as follows:—Out of 25 eases, 13 had both pupils equally affeeted, being very sluggish in their movements, and more or less dilated; and of these 13, 11 were affeeted with great exaltation, and ideas of riehes, etc.; one was depressed, and another was deeply demented: 2 have permanently eontraeted, or nearly pin-point pupils, and both have exaltation; 6 have the right pupil affeeted, and of these 5 have exaltation and only 1 depression; 4 have dilated and insensible left pupils, and of these 3 are happy, and the fourth demented. These results would tend to show that there is no eonneetion between the pupil affected, and the eharaeter of the mental symptoms. Nor have I been able to find, in any of my Pathologieal Notes, extending over upwards of 100 eases, the morbid eonditions of the thalami, deseribed by Dr Austin, as eoineiding with a happy or melancholie eondition, aeeording as the right or left is most diseased.

General Paralysis, aeeording to eommon observation, is much more frequent among males than females. Dr Austin thinks this disparity has been over-stated, and finds, as the result of his experienee, that about 2 out of 3 eases only are males. This may be the ease in London; here I have very seldom more than one female paralytie under my eare at any one time. I have never had more than 5; while I have seldom had fewer than from 22 to 25 males affeeted with the disease in the asylum.

The disease appears to be more eommon in large eities than in provineial towns or rural distriets. Of Dr Austin's eases, 105 were from towns, and only 42 from rural distriets. This faet appears to be borne out by the reports of our various asylums; the proportion

of such cases being much greater in those asylums which are connected with large towns. To take a single instance: In the asylum at Montrose, with about 300 inmates, there are, at present, no cases of general paralysis. I single out this case in illustration, for this reason, that Dr Howden, the physician of that asylum, having been four years an officer of the asylum under my care, I feel confident that he would recognise the disease with the same certainty and facility which enabled him always to find about 25 cases in the Edinburgh Asylum; and the fact cannot, therefore, be referred to his seeing the disease with different ideas of it from my own.

The *age* at which this disease occurs most frequently is from 30 to 50, and more frequently between 35 and 45, than before or after those ages. It is extremely rare before 20 years of age, and also comparatively rare after 60. The following tables show the ages of the cases I have myself analysed, and their duration:—

Total Number of Cases Tabulated, 108 males and 12 females.

IV.—AGE AT FIRST ATTACK.

	Males.	Females.
From 20–25,	4	...
,, 25–30,	4	2
,, 30–35,	19	1
,, 35–40,	31	2
,, 40–45,	14	3
,, 45–50,	14	...
,, 50–55,	8	2
,, 55–60,	8	1
,, 60–65,	1	...
,, 65–70,	2	...
Unknown,	3	...
	108	12

V.—DURATION.

Under 3 months,	1	...
,, 4 ,,	1	...
,, 5 ,,	1	...
,, 6 ,,	4	..
,, 1 year,	8	2
,, 2 ,,	25	1
,, 3 ,,	13	1
,, 4 ,,	8	2
,, 5 ,,	3	1
,, 6 ,,	4	1
,, 7 ,,	1	...
,, 9 ,,	1	...
,, 10 ,,	1	...
Still in Asylum,	14	...
Unknown,	23	4
	108	12

The average duration of cases of general paralysis was estimated by Calmeil at thirteen months; Esquirol states that very few cases

survive beyond three years. I have known one or two cases of five years' duration, two above nine; and, including those cases where the paralysis had preceded the mental derangement for some time, I have known cases where the disease had extended beyond fifteen years. Dr Austin mentions one of sixteen years.

As far as our knowledge of this disease at present extends, it appears to be incurable; this, at least, may be inferred from the conclusions of the most cautious and experienced observers. M. Royer Collard, many years at Charenton under Esquirol, never knew of one. Esquirol modestly states that he thought he had seen three cases, and Calmeil ventures to say he knew of two cases which recovered. I do not know of any well authenticated case of recovery. I have seen a good many cases where there were very remarkable remissions in the symptoms—cases where the sanity appeared to be completely restored for a time—but in all these cases the symptoms returned sooner or later, and the disease went on to its usual fatal termination. I have already alluded to one or two such cases, and as they present some points of medico-legal interest, I shall briefly mention three in illustration. One of them was an officer who entertained the most extravagant delusions, such as that he had been ennobled by the Queen of Spain, that he was an exquisite singer and a popular novelist, and that he was possessed of enormous wealth; his speech, and gait, and features, presented all the distinctive characters of general paralysis. After a few months' treatment he appeared to recover his sanity completely, and then rejoined his wife and family. His wife and other friends were convinced he was as well as he had ever been at any period of his life. Although warned by me that he would relapse, and advised to sell out (his commission being then worth about L.4000), they would not; on the contrary, they were so confident of his recovery, that they applied for an extension of his leave. The anxiety as to his getting his leave extended quite upset him, he became depressed and restless, and complained of formication of the skin. Immediately after he received an extension of his leave, he was seized with epileptiform convulsions, which continued, without almost any intermission, until he died.

In a second case, the patient recovered so far as to be able to resume his duties as a shopkeeper; but within a few months his memory showed marked symptoms of impairment, and ere long he was sent back to the asylum, where the disease ran through its usual course to a fatal termination.

In a third case, the gentleman was an engineer, and had distinguished himself in the service of the Sultan. He was removed from my care after a remarkable improvement, and his wife rejoined him in the country. After residing with him for some months, she was so convinced of his complete recovery, that she consulted me about the propriety of his returning to Constantinople, and resuming his professional duties. I advised her strongly to delay, and in the

meantime to permit him to try his skill on the same duties at home, as a matter of amusement. It was found, on this trial being made, that he could not complete the simplest work assigned to him. In a few weeks I saw him again in consultation, and it was then found necessary to send him to an asylum. I have been consulted about more than one case of the same kind in somewhat similar circumstances. Such cases as these fully explain, I fear, the very few instances upon record in which recovery is said to have taken place. I have no doubt that they were discharged from asylums when enjoying such a temporary remission, and that their subsequent history was unknown.

I believe, also, that these temporary recoveries are more apparent than real. The person is considered sane by ordinary observers, judging from conversations upon ordinary and familiar topics. But the persistence of the disease is seen by the expert, not only in the impaired speech, unsteady gait, and inexpressive face, but in the facile disposition, impaired energies, and the inability, when tested, as in the last mentioned case, to execute any task, even of a simple and familiar kind, requiring the continued exercise of thought and attention. A letter, written on any subject requiring a little reflection and judgment, will often show the utter prostration of the reasoning faculties, when they are not exhibited through the familiar formulas of an ordinary conversation.

Cases of temporary recovery of mental sanity such as these, or apparent recovery, must present very great difficulties in questions regarding the validity of deeds executed, or the responsibility for crimes committed, during such a remission. The medico-legal bearings of the subject were the source of very great discrepancy of opinion between the medical witnesses, in two very important cases, which occurred during the year 1858. The one was an English, the other a Scotch case. In both cases, the subsequent progress of them left no doubt in the minds of competent authorities, that they were cases of general paralysis; yet, at the time to which the legal inquiries referred, there was the greatest difference of opinion among the medical witnesses as to this fact, or, indeed, as to the existence of insanity at all. The cases which I have adduced afford an easy explanation of the discrepancies of opinion which existed between the medical witnesses,—namely, that the subjects of inquiry had made, at the periods referred to, a partial and temporary recovery of their mental sanity. It is, however, a very grave and important question, whether such a temporary and apparent recovery, or lucid interval, occurring in the course of a case of general paralysis, can be so complete as to render deeds executed at the time valid, or to make the individual a responsible agent.

In the case of Sir Henry Meux there was distinct evidence of the paralytic affection, and of several epileptiform attacks, long anterior to the time at which he executed the disputed codicil to his will. There was also very distinct evidence of insanity previous to this

period; but, at the time he signed the codicil, he was described by his agent as perfectly sane and intelligent, and capable of transacting business of any kind. I think the only way to reconcile the conflicting testimony in this case is to suppose that Sir Henry presented another illustration of those remissions, or partial and temporary recoveries of sanity, which I have described, at the time at which the disputed deed was signed. In such remissions, I think, there must be a strong presumption of inability to transact business, such as making wills, and a general incapacity to understand the proper relations of any subject in all its details.

Causes.—The most frequent cause of this disease has been very generally regarded as the abuse of alcoholic stimulants. Certainly this is a frequent cause; but in not a few instances in which it has been assigned as the cause, I have found, upon making a careful inquiry, that it was in reality one of the symptoms which supervened after the invasion of the disease. Dr Austin thinks that moral causes—violent shocks to the mind, acutely painful impressions—are the most frequent and usual causes. In 52 out of 77 cases, he found the disease followed painful mental shocks. It is a remarkable fact, that a disease which, as we will see, depends upon well marked morbid changes in the brain and its membranes, should be produced by moral causes; yet it seems undoubted. I had lately placed under my care a young man, labouring under a very advanced stage of this disease, in whom it was occasioned very shortly before, by his being called upon to identify the bodies of his wife and children, who had been killed by a railway accident. Of 72 cases in which I was able to ascertain the cause, it was said to have been intemperance in 26. Of these 26, however, not a few had been exposed to privations, losses in business, and over-work, and in several there was a hereditary tendency. Twenty-eight of the 72 cases were ascribed to moral causes, such as alarm, grief, anxiety, over-excitement, and pecuniary losses; 6 were ascribed to injuries of the head; 5 to exposure to a high temperature and fatigue; and 3 to exposure to wet and fatigue.

The following table exhibits my experience in the cases already referred to:—

V.—CAUSES.

	Males.	Females.
Parturition,	...	1
Intemperance,	26	...
Venereal Excess,	4	...
Disappointments in Business, etc.,	15	1
Grief,	9	...
Over-Excitement, Anxiety,	8	...
Exposure to Wet and Fatigue,	2	...
,, High Temperature and Fatigue,	7	...
Coup-de-Soleil,	1	...
Carry forward,	72	2

	Males.	Females.
Brought forward,	72	2
Injuries to Head, . . .	7	2
,, by Railway Accident, . .	1	...
Renal Disease, ...	2	...
Suppression of Periodic Epistaxis, .	1	...
Hereditary tendency, . . .	14	3
Unknown, ...	35	5
	132	12

Pathology.—The limits of this paper have already so far exceeded those proper to a communication for this Society, that I shall not enter into a detailed history of the investigations into the pathological appearances presented in the bodies of those who have died of this disease. I shall content myself by stating briefly, that, in a very large proportion of cases, there is found the evidences of a chronic inflammatory action in the membranes of the brain, consisting in thickening and milky opacity of the arachnoid membrane, a gelatinous thickening of the pia mater, or serous effusion into the sub-arachnoid cellular tissue or pia mater. In old cases, this serous effusion is often very great, so as to cause obvious diminution in the size of the cerebral convolutions and increased depth and width of the sulci—in short, a general atrophy of the brain. The membranes very frequently adhere firmly to the grey matter; but in those cases where there is a large amount of serous effusion, they can be readily stripped off. The grey matter of the convolutions appears to be softer than usual in most cases, and can be readily broken up and washed away by a stream of water which will not affect a healthy brain. It is also more or less congested; and in those cases where it is adherent to the membranes, on attempting to strip off the membranes, a granular layer of the grey substance is generally stripped off along with them. On examining the grey matter with the microscope, the nucleated cells, which form a considerable part of its structure, are found to be enlarged, and generally irregular in form, compared with those of a similar portion of healthy brain. The white matter of the cerebrum is very frequently tougher and harder than usual, in some cases remarkably so. In others it is soft, and sometimes the fornix, sept. lucidum, and commissures are quite diffluent. The ventricles commonly contain a considerable, sometimes a large amount of fluid, and their lining membrane is not unfrequently studded with minute points, which give the surfaces of the thalami and corpora striata a frosted or crystalline appearance. This morbid condition is occasionally observed on the arachnoid covering the brain.

I have thrown into a tabular form the morbid appearances found in the head, in 122 cases of general paralysis. They were as follows:—

Calvarium of unusual thickness, ...	16
,, ,, thinness, ...	9

Diploe absent,	7
Osseous projections from inner surface of cranium,	3
Ossific deposits in dura mater,	4
Tumours in dura mater,	2
Abnormal adhesion of do. to calvarium,	20
Opacity and thickening of arachnoid,	82
Congestion of membranes,	41
Abnormal adhesion of do. to convolutions,	60
Arachnoid and sub-arachnoid effusion,	76
Sub-arachnoid sero sanguinolent do.,	4
Sero sanguinolent do. into sac of arachnoid,	4
Pus in do.,	1
Granular deposit in do.,	5
Coagulable lymph in do. at base of brain,	6
Atrophy of optic nerves,	4
Grey matter unusually pale,	12
,, ,, dark,	27
,, ,, of a violaceous tint,	11
,, ,, softened,	37
White matter softened,	11
,, hardened,	21
Lateral ventricles contained serous effusion,	50
,, ,, ,, sero sanguinolent do.,	1
Granular deposit in lining membranes of do.,	43

In a considerable number of cases cysts were found in the choroid, in three cases blood clots were found in the brain, and in five or six a thin layer of blood of old standing formed a false membrane, covering the greater part of one of the cerebral hemispheres.

In a paper which I had the honour to read before the Society some years ago (in 1854), I showed that the specific gravity, both of the grey and white substance of the brain, was increased in general paralysis. I showed also that the weight of the brain, and, in particular, the relative weight of the cerebellum to the cerebrum, is increased in the insane, and particularly so in the general paralytic. How far this fact may bear upon the functions ascribed to the cerebellum by some physiologists, as the organ by means of which we control, regulate, and co-ordinate our muscular movements, I shall not at present attempt to determine. But I may suggest that, if corroborated by further experiments, it would lead to the inference that the cerebellum is the organ through which we exercise self-control—control over the volitions and successions of our thoughts, as well as over our muscular movements—perturbed volition, or loss of self-control, being the most essential features of insanity.

It is unnecessary to say much about the treatment of what I have pronounced an incurable disease. A vast variety of remedies have been tried, without effect. A course of mercury has been recommended as a means of curing the disease. I have tried it in several cases, even at an early period, but without any benefit. I am not aware that, even in the earliest stages in which this disease has been subjected to treatment, any beneficial results have yet been obtained.

The treatment at present, therefore, is chiefly palliative. Re-

moval from all sources of excitement, mental repose, the use of a liberal diet, and the moderate addition of wine or malt liquors, appear certainly to prolong life, and to ameliorate to a certain extent, and for a time, the condition of the patients. In some cases leeches to the temples, and blisters to the nape of the neck, are useful in the treatment of the epileptiform attacks. Most frequently, however, they are relieved by the use of copious enemata alone. The extract of hyosciamus in large doses of ℈i to ℥ss, repeated at intervals of six or eight hours, has been found very useful as a sedative in subduing the maniacal excitement which so often attends this disease during some part of its course.

I fear I have already far exceeded the limits of a communication for the Society, and trespassed too long upon your patience.

I conclude with a single reflection. Medical writers and poets have vied with each other in attempts to depict in glowing colours the painful interest attending the gradual but certain progress of decay in patients labouring under phthisis. It appears to me that the most graphic description of this disease would fade, when compared with a faithful portrait of general paralysis. This disease suddenly seizes its victim in the prime and vigour of life, when he has acquired, by unexampled industry it may be, a high position in the profession which he adorns. In phthisis there are commonly early warnings of the insidious malady, and the patient is in some measure prepared for its development. His mind may remain clear and unclouded to the last, and cheered by the vain hopes which are the common accompaniment of his disease, he lives on cheerfully, and, as we have often seen, the light of life goes out with some degree of splendour. But in general paralysis it is otherwise: its victim, arrested suddenly in the height of prosperity, gradually degenerates into a state of hopeless fatuity, and dies when far beyond the reach of friendly consolation. If there is something in the *hope* which sustains the consumptive patient during his illness which can be regarded as a blessing, there is the same alleviation to the sufferings of the general paralytic; for, during the progress of his rapid decay, he is insensible to all the ills of life, the grief of friends, the ruin of his hopes, and fame, and family: he staggers about, boasting of his wealth and grandeur; and, even when hardly able to swallow, powerless to move, and on the brink of the grave, he is babbling in a speech, no longer articulate, that he is "my Lord Duke," and that it is "all right." It may be consolatory to think that the sufferer is thus unconscious of his condition; but it adds, I think, painfully to the features of the disease, to see so much boasted grandeur and wealth associated with so much physical and mental degradation.

Let us hope that, when we are enabled to recognise this disease earlier, and when we come to know it better, it may be found not less amenable to treatment than the malady with which I have contrasted it.